

**ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM**

Plant Abstract

Element Code: PMORC17030

Data Sensitivity: Yes

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Goodyera repens* (L.) R. Brown ex Ait. f.

COMMON NAME: Lesser rattlesnake plantain, Dwarf rattlesnake-plantain, northern rattlesnake-plantain, creeping goodyera, net leaf, squirrel ear, tessellated lesser rattlesnake plantain, creeping ladies' tresses.

SYNONYMS: *Satyrium repens* L., *Goodyera ophioides* (Fern.) Rydb., *Goodyera repens* var. *ophioides* Fern., *Goodyera repens* ssp. *ophioides* (Fern.) A. Löve & Simon, *Peramium ophioides* (Fern.) Rydb.

FAMILY: Orchidaceae

AUTHOR, PLACE OF PUBLICATION: *Goodyera repens* (L.) R. Brown, Hortus Kewensis 5: 198. 1813. *Satyrium repens* L., Species Plantarum 2: 945. 1753.

TYPE LOCALITY: "in forests in Sweden, England, Siberia and Switzerland." (Luer, 1975).

TYPE SPECIMEN:

TAXONOMIC UNIQUENESS: One of four species in the genus *Goodyera* in North America, and one of two in Arizona. The other Arizona species is *G. oblongifolia*. The varieties *repens* and *ophioides* are not recognized by Flora of North America, because of the variation in the degree of white reticulation (FNA 1993+).

DESCRIPTION: A relatively small creeping plant, about 9-12 cm (3.5-4.7 in) tall, spreading by rhizome with scattered fibrous roots. In Europe, *Goodyera repens* get to a height of 25 cm and to nearly 20 cm in other parts of North America, but in Arizona and New Mexico, plants rarely exceed 12 cm. Evergreen leaves number 4 to 8 and are arranged in a basal rosette, rosette about 4.5 cm across. Leaves are ovate to oblong elliptic, 1.1-3.2 x 0.5-1.8 cm, uniformly green or with green lateral veins bordered by white or greenish white tissue. The unmarked pattern is typical of western plants (the unmarked pattern has also been observed in Eurasia (Luer 1975)). Inflorescence secund, infrequently loosely spiraled, 7-36 flowered; peduncle 3-18 cm (1.2-7 in). Floral bracts are lanceolate to elliptic lanceolate, 3 mm long, clasping ovary. Flowers are fragrant, white (sometimes greenish-white), about 3 x 3 mm, with the dorsal sepal and petals forming a hood over the column; the hood is 3-5.5 mm. Sepals are white with fine white hairs covering the back. The dorsal sepal is broadly elliptical and concave, while the lateral sepals are ovate and concave. White petals are spatulate, and are also covered with fine hairs on the back. The lip is white, and deeply saccate with narrow acute apex, inner surface with 2 or 4 glandular ridges. The anthers are inflexed, not immersed in shallowly concave clinandrium, apex apiculate.

The column is tiny, with yellow blunt pollinia; rostellar beak 2-pronged, 0.2-0.6 mm, shorter than body of stigma; viscidium orbiculate. Many-seeded capsule is ellipsoidal, 5-9 mm. (FNA 1993+; Coleman, 2002).

AIDS TO IDENTIFICATION: *Goodyera repens* is the smaller of the 2 *Goodyera* species in Arizona and New Mexico. It is almost always less than 12 cm tall in bloom and usually under 10 cm tall. *G. oblongifolia* is usually much taller, at least 20 cm tall. The white hairs on the sepals, petals, stems and ovary of *G. repens*, is longer and more numerous than *G. oblongifolia*. (Coleman, 2002). The dull, deep, almost bluish green leaves of *G. repens* are 1-2 cm long, lacking a white midrib bit with white markings on the crossveins, while the leaves of *G. oblongifolia* are 3.5 cm long with a white midrib. In addition, *G. oblongifolia* leaves are "crisped" on the margins, while *G. repens* leaves are flat (Spackman et al., 1997), and the inflorescence of *G. oblongifolia* is greater than 6 cm long.

ILLUSTRATIONS: Color photos of plant and habitat (Coleman, 2002: plate 11).
Line drawing (J.R. Janish in <http://nhp.nris.state.mt.us/plants/>, 2002)
Line drawing (Spackman et al., 1997)
Color photo (B. Jennings in Spackman et al., 1997)
Color photo of habitat (J. Coles in Spackman et al., 1997)
Color photos (L.E. Epple in A.O. Epple, 1995: plates 293A and B)
Color photo (<http://www.borealforest.org/>)
Color photos (http://www.em.ca/garden/nat_goodyera_repens.html)
Line drawing (in FNA 1993+ at http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=200028685)
Line drawing (Britton, N.L., and A. Brown 1913, in http://plants.usda.gov/cgi_bin/plant_search.cgi)
Color photos (Allen Chartier, in http://www.amazilia.net/images/Plants/Orchids/Goodyera_repens.htm)
Color photo and line drawing (in <http://www.treesforlife.org.uk/tfl.crladiesstress.html>)
Line drawing (Britton, N.L., and A. Brown, 1913, in <http://www.neartica.com/flowers/orchid/Grepens.htm>)
Color photos (Richard Reeves, in <http://www.nativeorchid.com/Lesser.htm>)

TOTAL RANGE: Circumboreal, *G. repens* grows in temperate regions of the Northern Hemisphere. It ranges from Arizona and New Mexico, north through Colorado, Wyoming, Idaho and Montana, east through South Dakota, Minnesota and Michigan, through the eastern and northeastern U.S. It also occurs in Canada and Alaska, and many parts of Asia and mainland Europe.

RANGE WITHIN ARIZONA: Apache and Greenlee counties in eastern Arizona.

SPECIES BIOLOGY AND POPULATION TRENDS

GROWTH FORM: Perennial forb/herb.

PHENOLOGY: Flowers late July-August. In Arizona and New Mexico, flowering begins about the first of August and continues until the first part of September. Because it blooms late in the season, few other orchids are in bloom when *G. repens* opens.

BIOLOGY: *Goodyera repens* propagates by seed and vegetatively by long underground runners, however, it does not form large colonies with hundreds of plants as does *G. oblongifolia*. Seeds require a mycorrhizal endophytic fungus, (*Ceratobasidium cornigerum*) or (*Rhizoctonia goodyearae-repentis*), to develop in the wild (Rook, 2002). *Goodyera repens* requires more moist conditions than *G. oblongifolia*. A good indicator of their potential presence is the amount of moss on the humus. Usually, the more terrestrial moss, the greater the moisture content of the humus, and the more likely *G. repens* will be present. It is shallowly rooted that it sometimes colonizes moss-covered rocks, with its rhizome, roots, and runners visible at or near the surface of the moss. The growing tip of a rhizome produces a small whorl of evergreen leaves (rosette). The rosette dies after flowering, leaving other and younger branches of the rhizome to flower another year. Several sources report that it grows for 5 to 7 years before it blooms. This species is pollinated by bumblebees (*Bombus* spp.), moths and butterflies.

HABITAT: Grows in moderate to heavy shade in mixed fir, spruce, aspen, and conifer forest at elevations between 8,000 and 10,000 feet (2438-3048 meters). It can be found on nearly flat to fairly steep terrain, including meadows. The plants are thinly rooted in the duff and humus in damper parts of the forest.

ELEVATION: 8,000 – 10,000 ft (2438-3048 m).

EXPOSURE: North-, east- and west-facing slopes.

SUBSTRATE: Soils cool, acidic, and nutrient poor.

PLANT COMMUNITY: Found in the same habitat as *Calypso bulbosa* (fairy bulbosa), *Cypripedium parviflorum* var. *pubescens* (large yellow Lady's-slipper), and *Platanthera purpurascens* (= *stricta*, slender bog orchid) although they bloom earlier in the year.

POPULATION HISTORY AND TRENDS: Unknown.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None

STATE STATUS: Salvage Restricted (ARS, ANPL 1999)

[Salvage Restricted (ARS, ANPL 1993)]

OTHER STATUS:

None

MANAGEMENT FACTORS: *Goodyera repens* is sensitive to disturbance. It appears to be a fire-sensitive species. It prefers the shade of older forests and does not reinvade areas that have been opened up by fire (Williams, 1990).

PROTECTIVE MEASURES TAKEN: In Arizona, suitable habitat is protected within designated wilderness areas.

SUGGESTED PROJECTS:

LAND MANAGEMENT/OWNERSHIP: BIA – Fort Apache Reservation; USFS – Apache-Sitgreaves National Forest; Private.

SOURCES OF FURTHER INFORMATION**REFERENCES:**

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MAJOR KNOWLEDGEABLE INDIVIDUALS:

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ADDITIONAL INFORMATION:

Goodyera, in honor of John Goodyer (1592-1664), English botanist from Petersfield, Hampshire. *Repens* is from the Latin word meaning "creeping".

The rattlesnake plantains are distinguished by reticulated markings on the leaves which reminded the early settlers of the patterns on snakes. European settlers used the leaves to soothe mucous membranes, and to treat tuberculosis of the lymph glands and eye diseases.

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